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PHSB STUDIES

A Special Report Series by the N.C. Department of Human Resources, Division of Health Services, Public Health Statistics Branch, P.O. Box 2091, Raleigh, N.C.

No. 11

July 1978

HEALTH CHARACTERISTICS OF ADULTS IN NORTH CAROLINA'S HEALTH SERVICE AREAS

For the second consecutive year, a sample survey conducted by the North Carolina Division of State Budget and Management provides data regarding the demographic, health and economic characteristics of the state's household population. Named the North Carolina Citizen Survey (NCCS), the survey was conducted during September and October of each of the years 1976 and 1977.

Details concerning the 1976 survey design and methodology have been reported (1). Briefly, a stratified random sample with proportional allocation was selected from the prior year's state income tax returns and listings of residents eligible for Medicaid assistance. After elimination of duplicate household listings, a cross-section of adults was then questioned by telephone or in-person interview. A similar survey design was used in 1977 when the sampling frame included 96 percent of the household estimate for 1977 and the final sample included 1,400 households, each with a single respondent 18 or older (2).

The representativeness of the 1976 sample is discussed elsewhere (1). Again in 1977, the sample tends to underrepresent adult males, particularly in the Cardinal HSA. Compared to other estimates, both samples also appear to overrepresent middle-aged persons and underrepresent young adults to some extent. Although urban-rural identifiers changed from one survey period to the other, and with neither conforming to Census definitions, there is also some evidence that the 1976 sample overrepresented urban households while the 1977 sample appears biased towards rurality. This may explain some of the difference between 1976 and 1977 estimates of certain health characteristics. Except for possible urban-rural differences, however, chi-square tests applied to the statewide demographic data for 1976 and 1977 revealed no statistically significant differences between surveys.

In favor of more employment data and new information concerning citizens' attitudes towards government, the 1977 survey included fewer health questions than did the 1976 survey. However, a number of key indicators of health problems and health care utilization were common to both surveys, and the 1977 survey instrument solicited some new and important health-related information, for example, availability of health insurance and citizens' use of cigarettes and alcoholic beverages.

This report purports to highlight results of the 1977 survey and, where applicable, present corresponding estimates for 1976 (3). Except for Table 3 where the number of respondents (N) is given, 1976 results are based on 1,380 responses while 1977 results are based on 1,400 responses. In 1977, responses were distributed according to the following HSA totals: Western (261), Piedmont (278), Southern Piedmont (224), Capital (197), Cardinal (198) and Eastern (242). These figures are similar to those obtained in 1976.

In the computation of percentages, unknown and missing values generally have not been allocated to a response category; they are included only in the denominator.

Population Characteristics

Both the 1976 and 1977 surveys reveal major differences among the HSA's. These include greater rurality, lower incomes and older ages in the Western, Cardinal and Eastern HSA's; more nonwhites in the Capital, Cardinal and Eastern HSA's; fewer high school graduates in the Cardinal and Eastern HSA's. The 1977 survey also shows fewer female-headed households in the Western HSA; more farm workers in the Eastern HSA; more professional workers in the Capital HSA; and more industrial workers in the Western, Piedmont and Southern Piedmont areas.

Chronic Health Problems

Among the adult household population of North Carolina, 1977 NCCS findings show that about 37% had been told by a doctor they had one or more of eight chronic diseases, and about 8% reported symptoms of some neurological disorder. Corresponding percentages were 32 and 10 in 1976.

Circulatory problems, particularly high blood pressure, were the major type of chronic disease and fainting spells and blackouts were the main neurological problems. Epilepsy was reported by less than 1 percent. These results duplicate findings of the 1976 survey.

In 1977, about 14 of each 100 adults under age 30 had one or more chronic diseases while about 70 percent aged 65 and older had been diagnosed. As in 1976, more females than males reported high blood pressure (28% vs. 19%). This may be due to greater exposure of females to health care resources; hence, their greater chance of diagnosis. As expected, nonwhites also reported high blood pressure far more often than whites (37% vs. 20%). A 1974 nationwide survey estimated that 20.6 percent of persons 17 and older had been told by a doctor they had either hypertension or high blood pressure. Proportionately more women than men and blacks than whites reported hypertension at the time of interview. Current hypertensives were also more prevalent in the South than in other regions. (4)

Among other NCCS findings, 1977 results show cervix or womb, skin and breast to be the most frequent cancer sites.

Table 1 shows the percentages of diagnosed adults by HSA for both survey periods. In many cases, the 1977 percentage exceeds that for 1976. To what extent this is due to sampling deficiencies and response bias, as opposed to increased awareness of disease and exposure to diagnosis, is unknown. However, it is suspected that higher estimates in 1977 reflect to some extent greater rurality of the 1977 sample.

Table 1
Percentage of Adults Diagnosed by a Doctor
as Having a Particular Chronic Disease
1976 and 1977

	N.C.		Western		Piedmont		Southern Piedmont		Capital		Cardinal		Eastern	
	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977
Diabetes	4.2	6.4	4.3	7.3	2.9	4.0	5.7	4.9	5.6	7.6	3.2	7.1	3.6	8.3
Cancer	3.2	3.9	3.5	4.2	2.6	4.7	2.3	4.0	3.4	2.5	3.7	4.0	4.0	3.3
High Blood Pressure	19.9	23.7	15.7	21.8	12.1	21.9	27.6	21.9	17.3	19.3	25.8	28.3	21.8	29.3
Heart Disease	7.2	10.2	6.1	8.4	8.9	11.5	7.7	5.8	6.7	11.7	7.9	11.6	5.6	12.4
Stroke	1.7	1.9	1.3	3.1	1.8	2.5	1.1	0.0	1.1	1.5	3.7	2.0	1.6	2.1
Glaucoma	1.0	1.4	0.4	1.9	1.5	1.1	0.4	0.4	1.1	2.5	2.6	2.5	0.4	0.0
Kidney Disease	6.3	7.6	6.5	8.0	6.3	7.9	5.7	7.1	7.3	9.6	5.3	7.6	6.7	5.8
Lung Disease	3.1	3.0	3.5	4.6	4.8	4.0	2.7	2.2	3.4	1.5	3.7	3.0	0.8	2.1
One or more of above	32.0	37.4	*	39.5	*	38.1	*	31.7	*	32.0	*	39.9	*	41.7

*Not tabulated in 1976.

Survey results also indicate that about 15 percent of households include one or more persons with a physical handicap. The percent ranged from 13.2 in the Capital and Eastern HSA's to 16.7 in the Cardinal; the percent was higher at low income levels.

Restricted Activity Days

Compared to 15 percent in 1976, about 22 percent of the 1977 respondents said they had to go to bed or otherwise restrict activity during the month prior to interview. Females, nonwhites, persons at lower income and education levels and persons in larger households were more apt to experience restricted activity.

Tables 2 and 3 show data related to the duration and causes of restricted activity.

Table 2
Percentages of Adults Experiencing No Restriction
and Restriction Exceeding a Week's Duration Due
to Illness or Injury During Preceding Month
1976 and 1977

	N.C.		Western		Piedmont		Southern Piedmont		Capital		Cardinal		Eastern	
	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977
No Bed Days	88.3	86.6	90.8	87.0	92.6	87.8	85.3	84.8	88.7	86.8	84.7	81.8	86.8	90.1
More than 7 Bed Days	3.0	3.2	1.7	3.4	3.2	2.2	3.8	2.1	1.7	3.5	4.8	5.5	2.4	1.2
No Non-bed Restricted Days	85.8	84.8	90.4	83.5	85.9	87.1	83.7	82.1	84.3	85.3	83.7	89.9	86.3	81.4
More than 7 Non-bed Restricted Days	4.7	6.6	3.5	6.7	4.5	5.7	5.1	6.1	2.8	6.5	8.4	5.5	4.4	8.2
Mean Bed Days*	0.7	0.9	0.3	0.8	0.7	0.9	1.0	0.8	0.5	1.0	1.2	1.5	0.6	0.4
Mean Non-bed Restricted Days*	1.2	1.6	0.7	1.6	1.2	1.3	1.4	1.7	0.9	1.5	1.9	1.2	1.3	2.3

*Computed from grouped data.

Table 3
Percentage Distribution of Restricted Adults
by Cause of Restriction
1976 and 1977

	N.C.		Western		Piedmont		Southern Piedmont		Capital		Cardinal		Eastern	
	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977
Circulatory	13.7	11.6	4.3	6.6	15.4	12.7	13.3	4.1	14.3	16.2	26.5	14.0	5.7	17.5
Respiratory	26.0	27.5	30.4	37.7	28.2	34.5	26.7	34.7	25.0	24.3	11.8	14.0	34.3	15.8
Musculoskeletal	10.3	9.9	8.7	9.8	17.9	10.9	8.9	12.2	7.1	10.8	8.8	11.6	8.6	5.3
Accident	12.7	12.6	13.0	14.8	7.7	12.7	11.1	8.2	17.9	8.1	14.7	11.6	14.3	17.5
Other	37.3	38.4	43.6	31.1	30.8	29.1	40.0	40.8	35.7	40.5	38.2	48.8	37.1	43.9
(N)	(204)	(302)	(23)	(61)	(39)	(55)	(45)	(49)	(28)	(37)	(34)	(43)	(35)	(57)

Health Services

Table 4 shows the percentage distributions of adults by main type of health care provider, and Table 5 displays the percentages of households located more than 15 miles from the closest doctor, closest dentist and respondent's main health care provider. That more people had to travel long distances to the closest doctor and dentist in 1977 than in 1976 supports the suspicion of a more rural sample in 1977.

Table 4
Percentage Distributions of Adults by
Main Health Care Provider
1977

	N.C.	Western	Piedmont	Southern Piedmont	Capital	Cardinal	Eastern
Hospital Emergency Room	7.6	9.6	7.9	8.5	6.6	9.6	3.3
Hospital Out-patient Clinic	10.0	7.3	11.2	6.3	16.2	9.1	10.7
Public Health Department	2.0	1.5	1.8	0.9	1.0	1.0	5.4
Doctor's Office or Clinic	76.1	78.9	75.2	78.1	71.6	76.8	75.2
Other or Combination	3.7	1.9	3.6	4.5	4.1	3.5	5.0
Not Stated	0.6	0.8	0.4	1.8	0.5	0.0	0.4

Table 5
Percentage of Households Located More than 15 Miles
from Specified Health Care Resource
1976 and 1977

	N.C.		Western		Piedmont		Southern Piedmont		Capital		Cardinal		Eastern	
	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977	1976	1977
Closest Doctor	2.1	3.2	1.7	3.9	0.4	2.5	1.5	2.5	1.2	1.0	3.7	7.6	5.2	2.9
Closest Dentist	3.7	7.1	2.1	6.2	1.9	6.2	2.7	3.0	2.3	2.5	4.8	14.1	8.4	10.8
Main Provider of Medical Care	14.1		13.8		12.9		8.5		14.1		18.6		16.9	

NCCS results also show that in 1977 about 5 percent of adults said that during the past year they had sought but could not get one or more health services within 15 miles of where they lived. The percentages ranged from 1.8 in the Southern Piedmont HSA to 9.6 in the Cardinal; statewide, eye examinations and dental services were the categories of service most frequently not available close to home.

Asked to whom they would turn were they or some family member in need of mental health services, respondents said family physician, mental health center, minister, psychiatrist and friend, in decreasing order of frequency.

Health Care Buying Power

Table 6 provides various indicators of the availability of health care dollars. Often, economic deterrents to care appear associated with higher levels of diagnosed disease and/or restricted activity (Tables 1 and 2).

Health-related Personal Practices

Due to suspected relationships between health and consumption of cigarettes, alcohol and saccharin, the 1977 NCNS included questions concerning these personal practices. Results for HSA's are displayed in Table 7 where entries are the percentages of adults identifying with each category of practice.

Table 6
Indicators of Health Care Buying Power
1977

	<u>N.C.</u>	<u>Western</u>	<u>Piedmont</u>	<u>Southern Piedmont</u>	<u>Capital</u>	<u>Cardinal</u>	<u>Eastern</u>
<u>Percent of Adults Having:</u>							
No Health Insurance	7.6	8.8	5.4	6.7	7.6	9.1	8.7
Government Insurance*	23.6	21.1	19.8	20.5	22.8	26.3	31.8
Blue Cross and Blue Shield	40.3	41.0	40.6	30.8	46.2	35.4	47.1
Other Insurance Company	48.8	53.6	52.9	60.3	44.7	44.4	35.1
<u>During Past Year, Percent of Adults:</u>							
Using Medicaid**	10.2	9.2	8.3	9.8	9.6	11.1	13.6
Not Seeking Health Service Due to Expense	21.5	21.5	18.0	23.7	20.3	28.3	19.0
<u>During Past Year, Percent of Households Receiving Government Payments:</u>							
Unemployment Compensation	11.3	17.2	12.6	9.4	6.1	13.6	7.4
Veterans Payments	7.5	10.7	5.8	6.3	7.1	7.1	7.9
Social Security	28.1	28.7	27.3	24.1	29.4	29.3	29.8
Workmen's Compensation	1.8	1.5	0.4	1.3	2.5	3.0	2.5
Welfare Checks	5.6	5.0	4.0	5.4	7.1	4.0	8.3
Median Household Income ⁺	\$10,050	9,350	10,857	10,764	11,111	9,059	8,706

*Medicaid, Medicare, Champus.

**Compared to 8.7% in 1976.

⁺Computed from grouped data.

Table 7
Reported Consumption of
Cigarettes, Alcohol and Saccharin
1977

	<u>N.C.</u>	<u>Western</u>	<u>Piedmont</u>	<u>Southern Piedmont</u>	<u>Capital</u>	<u>Cardinal</u>	<u>Eastern</u>
<u>Percent of Adults Who Said They:</u>							
Did not smoke cigarettes	63.0	64.8	60.1	60.3	64.5	63.6	65.3
Smoked Less than 1 pack a day	14.1	12.3	18.0	13.8	14.2	15.2	11.2
Smoked 1 pack a day	16.6	18.0	16.9	17.0	14.2	15.7	16.9
Smoked 2-3 packs a day	5.0	4.6	4.3	8.0	4.1	5.1	4.1
Smoked more than 3 packs a day	0.6	0.4	0.4	0.0	1.5	0.0	1.2
Used beer at least once a week	18.0	18.0	13.3	21.0	22.3	19.7	15.7
Used liquor at least once a week	10.0	10.3	6.8	12.9	14.7	11.1	5.8
Used wine at least once a week	6.4	6.9	5.4	7.6	9.1	6.1	4.1
Used none of above once a week	76.7	77.4	81.3	71.0	73.1	74.7	80.6
Used saccharin or other sugar substitute regularly	23.9	17.6	19.1	26.3	24.9	25.3	31.8

In viewing these data, users should keep in mind that the sample appears to underrepresent males and young adults and possibly overrepresent middle-aged and rural residents. Based on survey responses, this means that estimates for cigarette and alcohol consumption are probably low. The percentages of users in each of several population subgroups are displayed below.

Percentage of Respondents Reporting Regular Use of

	<u>Cigarettes</u>	<u>Alcohol</u>	<u>Sugar Substitutes</u>
Male	43	34	20
Female	32	15	27
White	38	24	27
Nonwhite	31	20	14
Age under 30	40	29	17
Age 50 and over	29	17	29
Family Income under \$4,000	25	10	24
Family Income \$20,000 or more	31	45	30
Education less than 8 years	31	15	21
College Graduate	31	46	33
Town Size under 2,500	36	17	23
Town Size 50,000 or more	38	34	24

In addition to sample considerations, users should also be aware of possible bias due to the sensitivity of some of these questions. In this regard, it is noted that missing values were 5, 11, 25, 22 and 11 (out of 1,400) for questions on cigarettes, beer, wine, liquor and sugar substitutes respectively.

Due to the level of analysis and time required to examine relationships between disease and the several personal practices discussed here, these analyses are deferred to a later PHSB Study.

Conclusion

The 1977 survey, like its predecessor, appears to underrepresent adult males, particularly in the Cardinal HSA. Both surveys also appear to favor middle-aged adults over young adults to some extent. Hence, if independent estimates used for comparison are accurate, survey responses which are highly correlated with respondent's sex and age are biased.

Based on respondents' estimates of miles to the closest doctor and closest dentist, the 1977 NCCS also appears more rural than the 1976 NCCS. To what degree either survey is representative in terms of the urban-rural strata of North Carolina and the HSA's, and the extent to which urban-rural bias affects survey estimates, is unknown. However, 1976 and 1977 estimates are appreciably different in some instances.

Nonetheless, certain findings are common to both surveys, for example, the rank orders of statewide chronic disease awareness rates are identical; high blood pressure is the leading diagnosis and glaucoma the least, among the 8 disease entities studied. Also in both surveys, Cardinal residents were most apt to experience illness and injury requiring bed confinement. Users may search the tables for other findings associated with congruence between surveys.

Despite possible biases, the 1977 NCCS provides for the examination of relationships between disease and current use of cigarettes, alcohol and sugar substitutes. These analyses are in progress.

REFERENCES

- (1) North Carolina Department of Administration, Division of State Budget and Management. "How the Survey was Conducted and What It Cost," North Carolina Citizen Survey, Vol. 2. Raleigh, May 1977.
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- (3) North Carolina Department of Human Resources, Division of Health Services, Public Health Statistics Branch. "Health Problems and Health Care Among Adult Residents of North Carolina's Health Service Areas," PHSB Studies. No. 7. Raleigh, July 1977.
- (4) U.S. Department of Health, Education and Welfare, National Center for Health Statistics. Advance Data from Vital and Health Statistics. No. 2. November 8, 1976.

Once again, the PHSB wishes to express our hearty endorsement of the North Carolina Citizen Survey and to thank the Division of State Budget and Management for including certain questions to which we seek answers. Hopefully, the survey will be conducted on a regular basis and we will again be given opportunity to solicit important health-related information.



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